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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,721	03/18/2004	Shuichi Yamashita	01-581	5038
23400	7590	08/30/2006	EXAMINER	
POSZ LAW GROUP, PLC 12040 SOUTH LAKES DRIVE SUITE 101 RESTON, VA 20191			VINH, LAN	
			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 08/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/802,721	<b>Applicant(s)</b> YAMASHITA, SHUICHI	
	<b>Examiner</b> Lan Vinh	<b>Art Unit</b> 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 2-4 and 6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-4 and 6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2-3, 4, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai et al (US 5,949,118) in view of Peterson et al (US 2003/0008519)

Sakai discloses a method for etching silicon substrate. The method comprises the steps of:

immersing a silicon substrate 2 having a (110) surface in an etching solution of potassium hydroxide solution (col 4, lines 15-45)

anodizing a main surface of the silicon substrate 2 having a (110) surface, which is immersed in the potassium hydroxide solution, by applying an electrical potential to the silicon substrate while the silicon substrate is used as an electrode/anode, so that an oxide film is formed in the main surface of the silicon substrate (col 6, lines 3-10; fig. 1)

etching a main surface side of the silicon substrate 2 having a (110) surface in the potassium hydroxide solution (col 6, lines 9-15; fig. 5), maintaining the KOH at a temperature of 110 degree C ( col 11, lines 50-55)

Unlike the instant claimed invention as per claim 4, Sakai fails to expressly disclose maintaining the KOH concentration in a range of 39-48 weight percent although Sakai

discloses that the KOH solution can easily be controlled and the KOH solution may not be necessarily be 33 wt% (col 6, lines 62-67)

Peterson discloses a method for fabricating a semiconductor structure comprises a step of etching using a 10-45 wt% KOH solution at a temperature range of 50-100 degree C (col 2, paragraph 0042)

Hence, one skilled in the art at the time the invention was made would have found it obvious to modify Sakai KOH etching solution by using a selective etching 10-45 wt% KOH solution at a temperature range as per Peterson because Peterson discloses that by using the selective etching processes, it is possible to control the etching process to within +/- 10 angstroms, which is an order of magnitude better than the +/- 100 angstroms that can be achieved through a conventional etching process (col 3, paragraph 0043)

Regarding claims 2-3, Sakai discloses etching of the main surface side of the silicon substrate while applying the electrical potential and without applying the electrical potential (col 7, lines 25-38)

Regarding claim 6, Sakai discloses that the roughness of the etching surface further reduces to 1 micron or less (col 6, lines 48-51), which overlaps the claimed range of 0.8 micron or less

### ***Response to Arguments***

3. Applicant's arguments filed 7/26/2006 have been fully considered but they are not persuasive.

The applicants argue that there is no suggestion to combine the references of Sakai and Peterson because the Peterson et al. reference merely discloses etching of the silicon substrate and fails to disclose or suggest etching the main surface side of the silicon substrate at which a (1 10) surface is present, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, while it is true that Peterson fails to disclose or suggest etching the main surface side of the silicon substrate at which a (1 10) surface is present, it is also true that Peterson is relied only for the teaching of etching using a 10-45 wt% KOH solution at a temperature range of 50-100 degree C because the step of etching the main surface side of the silicon substrate at which a (1 10) surface is present is already taught by Sakai. Since the motivation to combine Sakai and Peterson comes from Peterson as set forth in paragraph 2, one skilled in the art at the time the invention was made would have found it obvious to employ Peterson teaching in Sakai method to produce the claimed invention

Thus, the rejection(s) of claims 2-4, 6 under 35 U.S.C. 103(a) as being unpatentable over Sakai et al (US 5,949,118) in view of Peterson et al (US 2003/0008519) are maintained.

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

#### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1765

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be "LV" followed by a stylized name.

August 25, 2006